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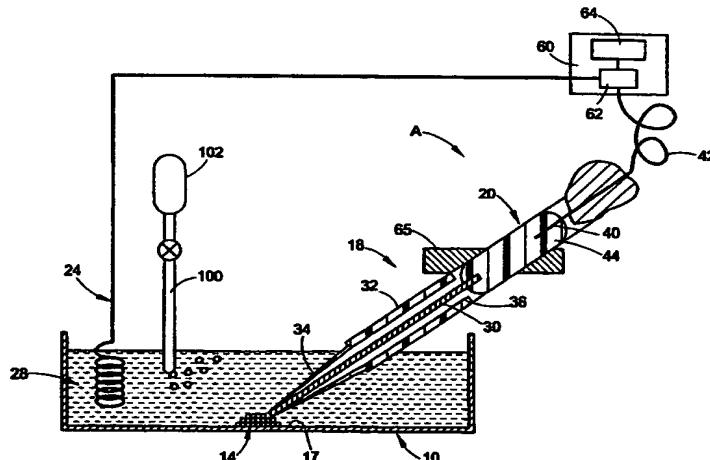
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(54) Title: DEVICES AND METHODS FOR ASSESSING CELLULAR TRANSPORT FOR RESEARCH, DRUG DISCOVERY AND TESTING, CLINICAL DIAGNOSES, AND THERAPY DESIGN



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(57) Abstract: A method of measuring efflux/influx of a chemical drug (26), such as doxorubicin from a cell (14, 52), such as a human cancer cell or other biological cell, includes introducing the drug to the cell, for example by immersing the cell in a culture medium containing the drug or by direct injection into the cell. The cell containing the drug is then immersed in a drug-free liquid medium (28) and the efflux/influx of the drug from the cell measured with electrochemical equipment (60). For detection of efflux from small populations of cells, or a single cell, the signal strength may be increased by preconcentrating the drug on a working electrode (20, 50) and by increasing the oxygen concentration of the medium around the cell. A cell or small group of cells (52) to be studied may be spatially positioned on a substrate (58) by coating a small area (72) of the substrate with a layer (73) of a hydrophilic material to which the cell attaches.



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